



## A SURVEY MADE IN THE INNER AREA OF MEZŐHEGYES ON CHOOSING THE ENERGY RATING OF THE ELECTRICAL HOUSEHOLD APPLIANCES CONSCIOUSLY

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### ABSTRACT

In this present study we are publishing a part of the results of a survey made in the spring of 2015 which we accomplished among the population living in the inner area of a small town called Mezőhegyes. It was a questionnaire survey connected to a field trip. We chose systematic sampling in making our questionnaire. The objects of the examinations were whether the people living there are conscious in choosing the energy rating of their electrical household appliances and how their energy consumption changed in the last 10 years. What is the most important point when purchasing a new electrical item: the price, the energy rating, the brand, the design or the others' opinion? Which are the most common household appliances? Do they use alternative energy resources?

Keywords: electricity consumption, electrical household appliances, price, energy rating

### 1. INTRODUCTION

Continuing the subject of a PhD thesis [1] defended in 2010 we accomplished a survey with Adrienn Kis [2] on the communal supply of manors in Mezőhegyes in 2012. We thought it would be worth carrying out a similar research in the inner area of Mezőhegyes, too. We are planning to publish hereby a smaller part of this thorough and longer survey – or more exactly, the results of the examination in connection with the conscious choice of the energy rating of electrical household appliances made by people living in the inner area of Mezőhegyes. We carried out a field trip together with a questionnaire survey.

We used the most up-to-date KSH data possible in the secondary examination. The main objective of the primary research was to see how much the alternative energy resources are used in Mezőhegyes, also whether the conscious choice of energy rating results in reduction of energy consumption. Therefore, we collected the data with a questionnaire survey connected to a field trip. We had the following assumptions:

1. We think that people living in the inner area of Mezőhegyes are conscious in choosing the energy rating of their electrical appliances.
2. We assumed that the energy consumption of the households was reduced in the last 10 years.

We aimed to prove these assumptions in our examination.

### 2. LITERATURE OVERVIEW

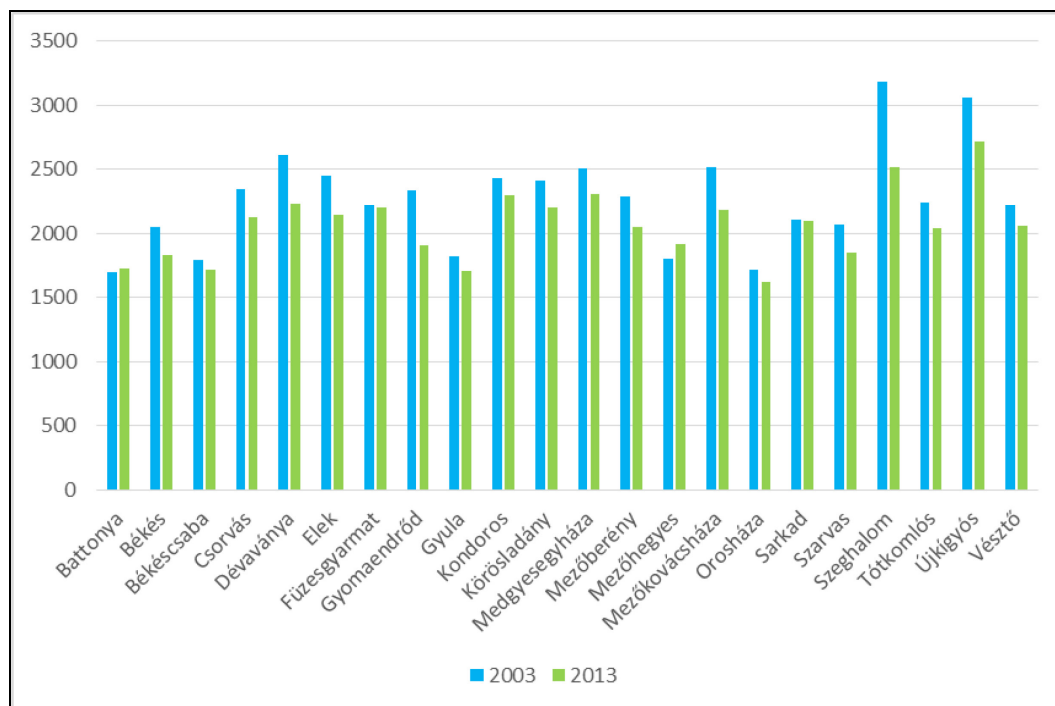
Abonyiné defined the idea of infrastructure this way: „the system of networks, objects, facilities, equipments, knowledge and institutions, also their activities and services provided by them which are essential and necessary for the operation, increase and competitiveness of the economy, for the life style and life quality of the population, for the development and smooth operation of settlements” [3].

Settlements cannot exist without infrastructure. The population living in a settlement need mains water, electricity for their electronic devices, also, gas and heating supply have to be provided. All these things together are called energy supply [4].

Power supply has an indispensable part in the development of a settlement's infrastructure. Public works increase the inhabitants' comfort. The public power supplier has to ensure the transfer of the high-voltage current produced in power plants and its transformation to low-voltage current for consumers. All these are done with different devices which have to be operated and maintained. The consumption can be measured by a meter and then a fee is billed which has to be paid by the consumer [5].



Electricity consumption is getting more and more important nowadays. The household appliances are more and more modern so they consume more power. According to [6], it is possible to conclude from the electricity consumption per one household consumer to the financial situation of the inhabitants, since bigger electricity consumption means more electrical devices in the household, as a conclusion, the population live in better conditions [1], [6].



**Figure 1. The annual electricity consumption per one household consumer in the towns of Békés county (2003-2013)(kWh)**

In 2003 the average of the electricity consumption in the towns of Békés county was 2268 kWh which reduced to 2067 kWh by 2013. The power consumption per capita in Mezőhegyes showed an increasing tendency in this period, though it was still quite low: 1919 kWh (Fig. 1), under the average of the towns of Békés county (2067 kWh). The national average is well above it (2094 kWh). However, the consumption of Mezőhegyes was above the regional average (1833 kWh) in 2013.

### 3. MATERIAL AND METHODS

In the secondary research we examined the changes in electricity consumption per one household consumer in Mezőhegyes between 2003 and 2013 on the basis of CSO data. Its level can demonstrate the financial condition of people there, as it has been mentioned in the introduction. The inhabitants' communal supply affects their comfort which shows either their positive or negative living conditions [6]. We used the data found in the database of the Central Statistic Office to compile this study. Analysis data were compared to the data of the towns of Békés county, to the town average of Békés county and to the national average, too.

Besides evaluating the secondary data, we carried out a primary research, as well: a questionnaire survey connected to a field trip. We chose systematic sampling in case of the questionnaire. We asked people living in every fourth house by street to complete the questionnaire. We used mostly closed-ended questions in our questionnaire which were either yes/no or wh-questions, also there was a question which



needed marking from 1 to 5. The examination was accomplished in the inner area of Mezőhegyes on 25 April, 2015. We asked structured questions [8]. The questionnaire was in a paper formatum. We ourselves were the interviewers. Altogether 130 questionnaires were completed out of which 123 could be evaluated.

#### 4. EVALUATION OF THE EXAMINATION RESULTS

The questionnaire had 15 questions. The first question was about how much the respondents use alternative energy resources. Most of them (97%) said no and only 3% use a sustainable energy resource.

The next question referred to those who use any alternative energy. They could choose from 5 alternatives: solar cell, solar collector, heat pump, wind farm, pellets or briquette, and others. 2 households use solar collector and 2 briquette heating.

The aim of the following question was to see how much they can save with the given method. The households with briquette heating could save a sum between 5.000 and 10.000 Fts, while the households with a solar collector a sum between 1.000 and 5.000 Fts. We concluded that although it is possible to save a lot with these methods, it is still very expensive to install these systems.

Our next question related to the electrical appliances in the households. The respondents could choose from 30 electrical devices, also we gave an „Other” category, too. The list included both consumer electronics and household appliances. 100% of the households have a television, vacuum cleaner and fridge. Besides, the five most frequent devices are:

- washing machine in 117 households (95%),
- iron in 108 households (87%),
- microwave oven in 102 households (83%),
- hairdryer in 93 households (75%),
- radio in 90 households (73%) can be found.

Only 12 households had an electroc radiator, perhaps because of its high energy consumption. 15 households had air-conditioners which means 12% of the respondents. The „Other” category included the extractor fan and the grain crusher, this latter one comes from the animal husbandry.

After that we asked how important the following aspects are for the population when buying an electronic device:

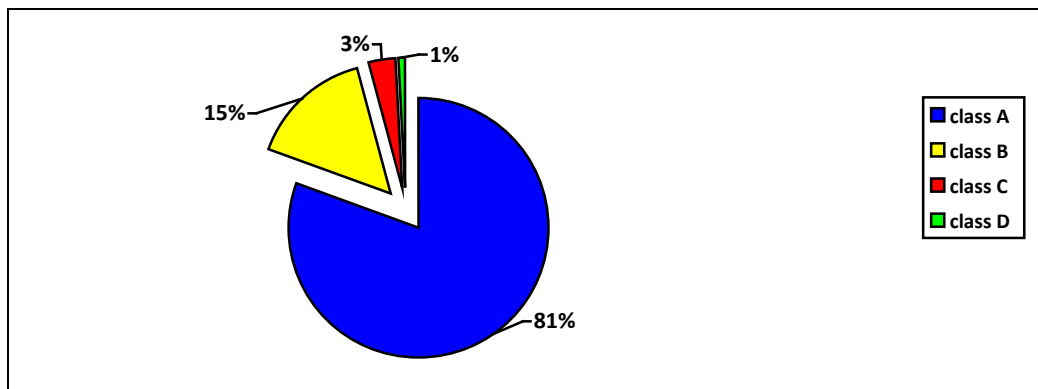
- Design
- Others’ opinion
- Brand
- Price
- Energy rating

We concluded from the results that price is the most important aspect, it is followed by energy rating, brand, design, and then the others’ opinion. Price got the average value 4,5; energy rating 4,4; brand 3,7; design 3,2; and the others’ opinion 2,7 on the scale of 5 which shows that for the respondents price is very important when they decide to buy a certain electrical device but they pay attention to its energy rating, too. Brand and design are relatively important, but the others’ opinion is not so much.

After that we asked the question which is in connection with our first hypothesis whether they choose the electrical device consciously regarding its energy rating. 90% of the respondents said ‘yes’. Presumably, they consider its energy rating for a more favourable consumption when they purchase the electrical appliance. As a conclusion, our assumption according to which most people in Mezőhegyes (90%) choose consciously their electrical devices regarding their energy rating was proved.

The next question allowed the respondents to choose which energy rating their electrical household appliances have.

Energy rating is marked with the letters of the alphabet from A to G. Devices with A rating save most energy, while ones with G consume most energy. 81% of the respondents chose A rating, 15% B, 3% C and 1% D (Fig. 2).



*Figure 2. Diagram on energy rating (n=123)*

After that we asked how much they see their power consumption change in the last 10 years. The respondents had to evaluate the percentage of this increase or decrease, or whether it remained the same. The examination showed that 54% experienced that the power consumption had been reduced. 34% said that their consumption had increased and 12% thought that it had not changed. We could have an answer to the second assumption, which says that the power consumption of the people in Mezöhegyes went down in the last 10 years, which is contrary to the CSO data (as we saw in the results of the secondary examination).

They could explain the reasons for that change in the next question. Those who chose the increasing power consumption said that electricity got more expensive and they had more electrical devices. Households choosing the decreasing power consumption explained that they were trying to save energy and money, besides, they had changed their old electrical devices with more energy consumption to energy-saving ones. It can be assumed that there is a relation between the conscious choice of energy rating and the reduced power consumption.

These questions were followed by ones on income and demography. One of the most delicate questions was the one on the monthly income of the household. The respondents hesitated to answer it, 100 out of the 123 completed questionnaires had an answer. We gave 7 intervals: the lowest category was under 100.000 Fts and the highest over 350.000 Fts. 24% of the respondents belong to the lowest category, while 3% to the highest one. Most of the respondents (33%) chose the category between 150.000 and 200.000 Fts.

The respondents by age:

- between the age of 20 and 30: 26%
- between the age of 31 and 40: 20%
- between the age of 41 and 50: 26%
- between the age of 51 and 60: 16%
- between the age of 61 and 70: 9%
- over 70: 3%

The highest level of education of 4% of the respondents is the primary school. 26% finished a trade school. Most of them (46%) went to either a secondary grammar school or a vocational secondary school and 22% graduated from university. Mostly, 2 people live in one household (40%). There are families where 5 people live under one roof which is 6% of the respondents. Families of 3 people (20%) and 4 people (20%) are also common. According to the survey, 2,6 people live in one household as an average.

57% of the households do not have dependants which means that each member of the family has his/her own income. There are households where the number of dependants is 2 people (19%). There are ones where 4 dependants live (2%). According to the survey, there is 1,25 dependant in one household as an average.



## 5. SUMMARY

It can be seen well from the secondary sources that during the examined period (2003-2013) the electricity consumption went down in most county towns, while it increased in Mezőhegyes.

The results of the primary research can be concluded as follows. The number of those who use any alternative energy resources is very low. 100% of the houses have a television, a vacuum cleaner and a fridge. Price and energy rating are the most important aspects when purchasing electrical household devices. Brand, design and the others' opinion are of less importance. Most of the respondents consciously choose the energy rating of their electronic appliances. The respondents in Mezőhegyes think that their power consumption went down. They assume it is so because they have changed their devices of bigger consumption.

Our first assumption has been proved. 90% of the respondents choose their electronic devices consciously, and only a 10% answered 'no'.

The second assumption has also been proved on the side of the respondents, since 54% of the respondents think that the electricity consumption of their houses went down. However, the CSO data are contrary to this opinion, since the data base shows that the level of energy consumption increased in the houses of Mezőhegyes in the last 10 years.

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